

WHAT IS CLAIMED IS:

1. A rubber composition comprising (a) a rubber component; (b) a silica filler; and, (c) at least one thiuram disulfide accelerator, it being provided that diphenyl guanidine is substantially absent in the rubber composition.

2. The rubber composition of Claim 1 wherein the rubber component is selected from the group consisting of natural rubber, homopolymers of conjugated diolefins, copolymers of conjugated diolefins and ethylenically unsaturated monomers and mixtures thereof.

3. The rubber composition of Claim 1 wherein the rubber component is selected from the group consisting of natural rubber, cis-polyisoprene, polybutadiene, poly(styrene-butadiene), styrene-isoprene copolymers, isoprene-butadiene copolymers, styrene-isoprene-butadiene tripolymers, polychloroprene, chloro-isobutene-isoprene, nitrile-chloroprene, styrene-chloroprene, and poly (acrylonitrile-butadiene).

4. The rubber composition of Claim 1 wherein the silica filler is selected from the group consisting of silica, precipitated silica, amorphous silica, vitreous silica, fumed silica, fused silica, synthetic silicate, alkaline earth metal silicate, highly dispersed silicate and mixtures thereof.



10. The rubber composition of Claim 8 wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> each are hydrocarbons of between 12 and 14 carbon atoms.

11. The rubber composition of Claim 1 wherein the thiuram disulfide is present in an amount of from about 0.05 to about 20 phr.

12. The rubber composition of Claim 1 further comprising a coupling agent selected from the group consisting of vinyltrichlorosilane, vinyltrimethoxysilane, vinyltriethoxysilane, vinyltris(β-methoxyethoxy) silane, β-(3,4-epoxycyclohexyl)ethyltrimethoxysilane, γ-glycidoxypropyltrimethoxysilane, γ-glycidoxypropylmethyldiethoxysilane, γ-glycidoxypropyltriethoxysilane, γ-methacryloxypropylmethyldimethoxysilane, γ-methacryloxypropyltrimethoxysilane, γ-methacryloxypropylmethyldiethoxysilane, γ-methacryloxypropyltriethoxysilane, N-β(aminoethyl)-γ-aminopropylmethyldimethoxysilane, N-β(aminoethyl)γ-aminopropyltrimethoxysilane, N-β(aminoethyl)γ-aminopropyltriethoxysilane, γ-aminopropyltrimethoxysilane, γ-aminopropyltriethoxysilane, N-phenyl-γ-aminopropyltrimethoxysilane, γ-chloropropyltrimethoxysilane, γ-mercaptopropyltrimethoxysilane, bis-(3-[triethoxysilyl]propyl)tetrasulfane, bis-[3-(triethoxysilyl)propyl]tetrasulfide; 3-trimethoxysilylpropyl-N,N-dimethylthiocarbamoyltetrasulfide; trimethoxysilylpropyl-mercaptobenz-thiazoltetrasulfide; triethoxysilylpropyl-methacrylate monosulfide;

dimethoxymethylsilylpropyl-N,N-dimethyl-thiocarbamoyltetrasulfide; dithiodipropionic acid and mixtures thereof.

13. The rubber composition of Claim 1 which is a tire tread, motor  
5 mount, rubber bushing, power belt, printing roll, rubber shoe heel and sole, rubber floor tile, caster wheel, elastomer seal and gasket, conveyor belt cover, hard rubber battery case, automobile floor mat, truck mud flap, ball mill liner or windshield wiper blade.

14. The rubber composition of Claim 1 further comprising at least one  
10 other additive selected from the group consisting of vulcanizing agents, activators, retarders, antioxidants, plasticizing oils, and softeners, reinforcing pigments, antiozonants, waxes, tackifier resins and combinations thereof.

15. The rubber composition of Claim 1 wherein the Mooney Scorch value  
15 of the rubber composition is greater than that of a similar rubber composition in which a significant amount up to the entire amount of the thiuram disulfide accelerator is replaced with diphenyl guanidine accelerator.

16. A method for increasing the Mooney Scorch value of a rubber composition which comprises the steps of forming a rubber composition comprising (a) a rubber component; (b) a silica filler; and, (c) at least one thiuram disulfide, it being provided that diphenyl guanidine is substantially absent in the rubber composition.

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17. The method of Claim 16 wherein the rubber component is selected from the group consisting of natural rubber, homopolymers of conjugated diolefins, copolymers of conjugated diolefins and ethylenically unsaturated monomers and mixtures thereof.

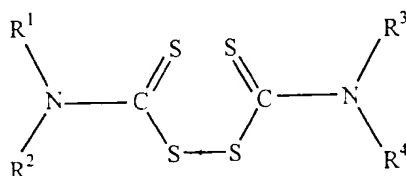
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18. The method of Claim 16 wherein the silica filler is selected from the group consisting of silica, precipitated silica, amorphous silica, vitreous silica, fumed silica, fused silica, synthetic silicate, alkaline earth metal silicate, highly dispersed silicate and mixtures thereof.

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19. The method of Claim 16 wherein the silica filler is present in an amount from about 10 to about 100 phr.

20. The method of Claim 16 wherein the thiuram disulfide is of the  
general formula



wherein  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  each are the same or different and are hydrogen or hydrocarbon of up to about 30 carbon atoms, optionally containing one or more heterocyclic groups, or  $R^1$  and  $R^2$  and/or  $R^3$  and  $R^4$  together with the nitrogen atom to which they are bonded are joined together to form a heterocyclic group, optionally containing one or more heterocyclic atoms.

21. The method of Claim 20 wherein  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  of the thiuram disulfide each are hydrocarbons of between 8 and 18 carbon atoms.

22. The method of Claim 20 wherein  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  of the thiuram disulfide each are hydrocarbons of between 12 and 14 carbon atoms.

23. The method of Claim 22 wherein the thiuram disulfide is present in an amount from about 0.05 to about 20 phr.

24. The method of Claim 16 wherein the rubber composition further comprises a coupling agent selected from the group consisting of vinyltrichlorosilane, vinyltrimethoxysilane, vinyltriethoxysilane, vinyltris( $\beta$ -methoxyethoxy) silane,  $\beta$ -(3,4-epoxycyclohexyl)ethyltrimethoxysilane,  $\gamma$ -glycidoxypentyltrimethoxysilane,  $\gamma$ -glycidoxypentylmethyldiethoxysilane,  $\gamma$ -glycidoxypentyltriethoxysilane,  $\gamma$ -methacryloxypropylmethyldimethoxysilane,  $\gamma$ -methacryloxypropyltrimethoxysilane,  $\gamma$ -methacryloxypropylmethyldiethoxysilane,  $\gamma$ -methacryloxypropyltriethoxysilane, N- $\beta$ (aminoethyl)- $\gamma$ -aminopentylmethyldimethoxysilane, N- $\beta$ (aminoethyl)- $\gamma$ -aminopentyltrimethoxysilane, N- $\beta$ (aminoethyl)- $\gamma$ -aminopentyltriethoxysilane, N-phenyl- $\gamma$ -aminopentyltrimethoxysilane,  $\gamma$ -aminopentyltriethoxysilane, N-phenyl- $\gamma$ -aminopentyltrimethoxysilane,  $\gamma$ -chloropentyltrimethoxysilane,  $\gamma$ -mercaptopentyltrimethoxysilane, bis-(3-[triethoxysilyl]-propyl)-tetrasulfane, bis-[3-(triethoxysilyl)-propyl] tetrasulfide; 3-trimethoxysilylpropyl-N,N-dimethylthiocarbamoyltetrasulfide; trimethoxysilylpropyl-mercaptobenzothiazoltetrasulfide; triethoxysilylpropyl-methacrylate monosulfide; dimethoxymethylsilylpropyl-N,N-dimethyl-thiocarbamoyltetrasulfide; dithiodipropionic acid and mixtures thereof.